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10/539,685	08/09/2006	Nigel Paul Maynard	65501-002US1	8586
69713 7590 10/15/2010 OCCHIUTI ROHLICEK & TSAO, LLP 10 FAWCETT STREET CAMBRIDGE, MA 02138				
EXAMINER				
LEONG, NATHAN T				
ART UNIT		PAPER NUMBER		
1715				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

INFO@ORTPATENT.COM

### Office Action Summary

**Application No.**

10/539,685

**Applicant(s)**

MAYNARD, NIGEL PAUL

**Examiner**

NATHAN T. LEONG

**Art Unit**

1715

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 August 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 32-85 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 32-85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## **DETAILED ACTION**

### ***Application Status***

Applicant's arguments and amendments filed 8/2/2010 are acknowledged.

Applicant has canceled all previously pending claims 1-31, and added new claims 32-85. Claims 32-85 are currently pending.

### ***Specification***

1. The disclosure is objected to because of the following informalities: Applicant's specification contains reference to the desired radio frequency heating wavelengths and states in the PGPub, para [0081], that radio frequency heating wavelengths of greater than 2.4 GHz is preferable. Para [0081] then continues to state that wavelengths of 27-40 Mhz are particularly desirable. However, if GHz is gigahertz and MHz is megahertz, since 1 GHz = 1000 MHz, this paragraph seems to contradict itself since 27-40 MHz is significantly smaller in value than 2.4 GHz, and the paragraph indicates that a wavelength of greater than 2.4 GHz is desirable.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim 33 contains the limitation "high temperature kiln dried". However, the metes and bounds of the phrase "high temperature" is unclear to one of ordinary skill in the art.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 50-51, 54-63, 66-72, and 76-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975.

Per claims 50 and 66, Guyonnet teaches the process of treating wood by impregnation comprising the steps of providing a lignocellulosic substrate (wood/lumber, see abstract), heating a target zone (col. 2, lines 5-14), and applying a composition to

the substrate (col. 2, lines 18-21). Guyonnet is silent regarding radio or microwave energy heating and the substrate being 15% moisture content or below (claim 50) or green wood (claim 66).

Vinden teaches a pre-treatment step of microwave radiation for preparing wood for impregnation (see abstract), wherein the wood is at 15% moisture content (see abstract), or green wood (col. 2, line 50). It would have been obvious to one of ordinary skill in the art to have included a pre-treatment step of microwave radiation in the process of Guyonnet on the disclosed substrates taught by Vinden because Vinden teaches that this pre-treatment step helps prepare wood for impregnation (col. 1, lines 12-15) and works best on wood with 15% moisture content or more (such as green wood).

Although it is not explicitly stated that the composition temperature is below that of the target zone, Guyonnet does teach it is desirable to apply the composition immediately after the heating/drying step so as to use the heat of the wood to benefit the composition (col. 2, lines 17-21). Additionally, Guyonnet teaches the wood is heated to 220-280C (col. 2, lines 28-29), and does not mention any heating of the composition during the impregnation, implying that the composition is applied at ambient temperature conditions (thus having the composition benefit from immediate application onto the heated wood). Additionally, and per claims 54-56 and 77-79, it is obvious that the temperature differential between the composition and wood is a result-effective variable and one of ordinary skill in the art would have optimized the

temperature differential to yield the best results via routine experimentation (see MPEP 2144.05).

Per claim 51, Vinden teaches suitable substrates for impregnation and microwave treatment include lumber (col. 6, line 21).

Per claims 57 and 76, Guyonnet is silent regarding the dimensions of the target zone, but does teach heating and curing the entire wood substrate, with the duration depending on the thickness of the wood (col. 2, lines 30-35). It would have been obvious to one of ordinary skill in the art, to choose the desired thickness of the wooden substrate depending on the type and purpose (such as hardwood flooring, dry wall, etc) of the desired final product. Per claims 58-59 and 69-70, Guyonnet teaches that the substrate is held at the elevated temperature for a prolonged period of time so that the entire target zone can be heated to the desired temperature (col. 2, lines 25-35). Per claims 60 and 71, Guyonnet teaches the same temperature range as Applicant (see Applicant's PGPub [0077]) and also teaches heating for a prolonged period; therefore it is inherent that some sterilization would occur during the treatment.

Per claims 61 and 72, since the heating/microwave step (i.e. temperature) is for the purpose of removing moisture from the wood (see abstract), it would be inherent that the loss of moisture is "controlled" during such step. Per claims 62 and 82, Guyonnet teaches the monomer is for the purpose of controlling or lowering the hydrophilicity of the wood substrate (col. 1, lines 25-30) and therefore is considered a water-proofing composition. Per claims 63 and 83, the composition is of a polymeric or pre-polymeric nature (see abstract).

Per claims 67-68, Vinden teaches appropriate substrates of green wood have moisture contents within the claimed range (col. 2, line 55). It would have been obvious to one of ordinary skill in the art, as stated by Vinden, that the moisture content would vary depending on the species of plant (col. 2, lines 50-54). Per claim 80, Guyonnet teaches the impregnation to occur under vacuum conditions (see abstract). Per claim 81, Vinden teaches the benefits of using a microwave heating as a pre-treatment to impregnation (see abstract of Vinden).

7. Claims 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, as applied above, further in view of Rem et al US 5555642.

Guyonnet and Vinden are silent regarding radio frequency heating at the claimed frequencies. Rem teaches the process of treating wood, in which radio frequency in combination with microwave frequency is used to dry/heat the wood (col. 3, line 50 to col. 4, line 5). It would have been obvious to one of ordinary skill in the art to have used radio frequency as taught by Rem in the process of Guyonnet and Vinden because Rem teaches that radio frequency is an effective method to heat/dry the wood substrate. Per claims 52-53, Rem teaches the claimed frequencies for radio drying (col. 4, lines 1-4), and it would have been obvious to one of ordinary skill to use these wavelengths to dry the wood because Rem teaches these frequencies as effective in drying the wood to 0-15% moisture content, which is desired by Guyonnet as Guyonnet aims to create a water-proofed wood product.

8. Claims 64 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, as applied above, further in view of Kusano et al US 4908392.

Per claims 64 and 84, Guyonnet and Vinden are silent regarding the composition being aqueous. However, Kusano teaches a process of impregnation using a polymerizable monomer in an aqueous medium (see abstract), said monomer being glycidyl methacrylate (col. 5, lines 1-5), which is the same monomer taught by Guyonnet. It would have been obvious to one of ordinary skill in the art to have used the glycidyl methacrylate in an aqueous medium as taught by Kusano because Kusano teaches that glycidyl methacrylate can effectively impregnate a substrate in an aqueous solution.

9. Claims 65 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in vi85

10. ew of Vinden et al US 6596975, as applied above, further in view of Bolle et al US 6187387.

Per claims 65 and 85, Guyonnet and Vinden are silent regarding the composition being applied via the claimed methods (Guyonnet teaches impregnation). However, Bolle teaches a composition impregnation into a wood substrate, and teaches effective alternative processes to impregnate the aqueous coating into the wood, such as brushing, dipping, deluging or spraying (see col. 25, lines 28-37). It would have been



obvious to one of ordinary skill in the art to have used one of the claimed techniques such as brushing, dipping, deluging, or spraying, instead of the impregnation taught by Guyonnet because Bolle teaches that such application techniques are equally effective and functional equivalents to impregnation.

11. Claims 73-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, as applied above, further in view of Seidner US 5447686.

Per claims 73-75, Guyonnet is silent regarding the exact thermal pretreatment process. Seidner teaches a pre-treatment process of heating/drying wood using steam (see abstract). It would have been obvious to one of ordinary skill in the art to have used steam (considered high humidity) to heat the wood because Seidner teaches steam to be a disinfectant and also remove any pests from the wood (see abstract). Per claim 74, the claim does not require that the first and second fluid medium be different fluids, therefore, per the teachings of Guyonnet, it would be obvious to use steam to maintain the temperature of the thermal pre-treatment until the target zone on the wood substrate was uniformly heated (as desired by Guyonnet).

12. Claims 32-35 and 38-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, further in view of Elder US 6345450.

Per claim 32, Guyonnet and Vinden are silent regarding the substrate being kiln dried. However, Elder teaches a process for treating green wood (the desired substrate of Vinden) by first kiln drying the lumber prior to treatment (col. 2, lines 15-25). It would have been obvious to use a kiln dried wood as taught by Elder in the process of Guyonnet and Vinden because Elder teaches that kiln drying is an effective way to remove excess moisture content in the wood (col. 2, lines 15-25). Although the microwave process of Vinden teaches it is desirable to use "green" wood, Elder teaches the kiln drying steps to only dry the wood enough so that it is stable and usable in any phase of lumber industry (col. 2, lines 17-18); Vinden also teaches that the microwave process can be used on woods with lower moisture contents between 15-30% by weight (col. 2, lines 55-58). Per claim 33, it would be inherent in any kiln-drying process that a "high" temperature would be used (to remove the moisture in the wood). Per claim 34, Vinden teaches it is desirable for the wood to have a 15% moisture content (see abstract). Per claim 35, Vinden teaches suitable substrates for impregnation and microwave treatment include lumber (col. 6, line 21).

Per claims 38-40, although Guyonnet is silent regarding the exact temperature differential of the composition and substrate during application, Guyonnet does teach it is desirable to apply the composition immediately after the heating/drying step so as to use the heat of the wood to benefit the composition (col. 2, lines 17-21). Additionally, Guyonnet teaches the wood is heated to 220-280C (col. 2, lines 28-29), and does not mention any heating of the composition during the impregnation, implying that the composition is applied at ambient temperature conditions (thus having the composition

benefit from immediate application onto the heated wood). Therefore, it is obvious that the temperature differential between the composition and wood is a result-effective variable and one of ordinary skill in the art would have optimized the temperature differential to yield the best results via routine experimentation (see MPEP 2144.05).

Per claim 41, Guyonnet is silent regarding the dimensions of the target zone, but does teach heating and curing the entire wood substrate, with the duration depending on the thickness of the wood (col. 2, lines 30-35). It would have been obvious to one of ordinary skill in the art, to choose the desired thickness of the wooden substrate depending on the type and purpose (such as hardwood flooring, dry wall, etc) of the desired final product. Per claims 42-43, Guyonnet teaches that the substrate is held at the elevated temperature for a prolonged period of time so that the entire target zone can be heated to the desired temperature (col. 2, lines 25-35). Per claim 44, Guyonnet teaches the same temperature range as Applicant (see Applicant's PGPub [0077]) and also teaches heating for a prolonged period; therefore it is inherent that some sterilization would occur during the treatment.

Per claim 45, since the heating/microwave step is for the purpose of removing moisture from the wood (see abstract), it would be inherent that the loss of moisture is "controlled" during such step. Per claim 46, Guyonnet teaches the monomer is for the purpose of controlling or lowering the hydrophilicity of the wood substrate (col. 1, lines 25-30) and therefore is considered a water-proofing composition. Per claim 47, the composition is of a polymeric or pre-polymeric nature (see abstract).

13. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, further in view of Elder US 6345450, as applied above, further in view of Rem et al US 5555642.

Guyonnet, Vinden, and Elder are silent regarding radio frequency heating at the claimed frequencies. Rem teaches the process of treating wood, in which radio frequency in combination with microwave frequency is used to dry/heat the wood (col. 3, line 50 to col. 4, line 5). It would have been obvious to one of ordinary skill in the art to have used radio frequency as taught by Rem in the process of Guyonnet, Vinden, and Elder because Rem teaches that radio frequency is an effective method to heat/dry the wood substrate. Per claims 36-37, Rem teaches the claimed frequencies for radio drying (col. 4, lines 1-4), and it would have been obvious to one of ordinary skill to use these wavelengths to dry the wood because Rem teaches these frequencies as effective in drying the wood to 0-15% moisture content, which is desired by Guyonnet as Guyonnet aims to create a water-proofed wood product.

14. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, further in view of Elder US 6345450, as applied above, further in view of Kusano et al US 4908392.

Per claim 48, Guyonnet, Vinden, and Elder are silent regarding the composition being aqueous. However, Kusano teaches a process of impregnation using a polymerizable monomer in an aqueous medium (see abstract), said monomer being glycidyl methacrylate (col. 5, lines 1-5), which is the same monomer taught by

Guyonnet. It would have been obvious to one of ordinary skill in the art to have used the glycidyl methacrylate in an aqueous medium as taught by Kusano because Kusano teaches that glycidyl methacrylate can effectively impregnate a substrate in an aqueous solution.

15. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guyonnet et al US 6248402 in view of Vinden et al US 6596975, further in view of Elder US 6345450, as applied above, further in view of Bolle et al US 6187387.

Per claim 49, Guyonnet, Vinden, and Elder are silent regarding the composition being applied via the claimed methods (Guyonnet teaches impregnation). However, Bolle teaches a composition impregnation into a wood substrate, and teaches effective alternative processes to impregnate the aqueous coating into the wood, such as brushing, dipping, deluging or spraying (see col. 25, lines 28-37). It would have been obvious to one of ordinary skill in the art to have used one of the claimed techniques such as brushing, dipping, deluging, or spraying, instead of the impregnation taught by Guyonnet because Bolle teaches that such application techniques are equally effective and functional equivalents to impregnation.

### ***Response to Arguments***

16. Applicant's arguments with respect to claims 32-85 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments over the newly added claims 32-85 are in regards to previous rejections over canceled claims 1-31. New prior art rejections are presented above.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **NATHAN T. LEONG** whose telephone number is (571)270-5352. The examiner can normally be reached on Monday to Friday, 9:00am to 6:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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